

## CLAIMS

What is claimed is:

1           1. A method for managing a code sequence, comprising:  
2           determining first intermediate correlation values for a first plurality of sample sequences  
3 during a first clock cycle;  
4           determining second intermediate correlation values for the first plurality of sample  
5 sequences during a second clock cycle; and  
6           determining correlation outputs for the first plurality of sample sequences from the first  
7 and second intermediate correlation values.

1           2. The method of Claim 1, wherein determining the first intermediate correlation values  
2 comprises processing coefficients in a first code sequence group in parallel with corresponding  
3 sample values in corresponding sample sequence groups from the first plurality of sample  
4 sequences.

1           3. The method of Claim 1, wherein determining the second intermediate correlation  
2 values comprises processing coefficients in a second code sequence group in parallel with  
3 corresponding sample values in corresponding sample sequence groups from the first plurality of  
4 sample sequences.

1           4. The method of Claim 1, wherein determining correlation outputs for the first plurality  
2 of sample sequences comprises taking a sum of the first and second intermediate correlation  
3 values for each of the first plurality of sample sequences.

1           5. The method of Claim 1, further comprising:

2           determining first intermediate correlation values for a second plurality of sample values  
3   during a third clock;  
4           determining second intermediate correlation values for the second plurality of sample  
5   values during a fourth clock; and  
6           determining correlation output values for the second plurality of sample value from the  
7   first and second intermediate correlation values.

1           6. A method for managing a code sequence, comprising:  
2           processing a first group of coefficients in the code sequence with a first group of sample  
3   values in a received sample to determine a first intermediate correlation value during a first clock  
4   cycle;  
5           processing a second group of coefficients in the code sequence with a second group of  
6   sample values in the received sample to determine a second intermediate correlation value during  
7   a second clock cycle; and  
8           determining a correlation output from the first and second intermediate correlation  
9   values.

1           7. The method of claim 6, wherein the code sequence comprises L coefficient and the  
2   first and second group of coefficients in the code sequence each comprises n coefficients.

1           8. The method of claim 7, wherein the first and second group of sample values in the  
2   received sample each comprises n sample values.

1           9. The method of claim 6, wherein the first and second group of coefficients in the code  
2   sequence are contiguous.

1           10. The method of claim 6, wherein the first and second group of sample values in the  
2 received sample are contiguous.

1           11. The method of claim 6, wherein processing the first group of coefficient in the code  
2 sequence with the first group of sample values in the received sample comprises determining a  
3 sum of the products of the first group of coefficients in the code sequence with the first group of  
4 sample values in the received sample.

1           12. The method of claim 6, wherein processing the second group of coefficients in the  
2 code sequence with the second group of sample values in the received sample comprises  
3 determining a sum of the products of the second group of coefficients in the code sequence with  
4 the second group of sample values in the received sample.

1           13. The method of claim 6, wherein determining the correlation output from the first and  
2 second intermediate correlation values comprises taking the sum of the first and second  
3 intermediate correlation values.

1           14. A method for managing a code sequence, comprising:  
2           organizing the code sequence, having a plurality of contiguous coefficients, into a  
3 plurality of contiguous code sequence groups;  
4           selecting a number of sample sequences to process in parallel where each of the sample  
5 sequences has contiguous sample values from a received sample;  
6           organizing contiguous sample values from each of a first set of sample sequences to  
7 process in parallel into a first set of contiguous sample sequence groups; and  
8           processing coefficients in each of the code sequence groups in parallel with  
9 corresponding sample values in corresponding sample sequence groups from the first set of

10 sample sequences, where each of code sequence groups is processed during a different clock  
11 cycle.

1 15. The method of Claim 14, further comprising:  
2 organizing contiguous sample values from each of a second set of sample sequences to  
3 process in parallel into a second set of contiguous sample sequence groups; and  
4 processing coefficients in each of the code sequence groups in parallel with  
5 corresponding sample values in corresponding sample sequence groups from the second set of  
6 sample sequences, where each of the code sequence groups is processed during a different clock  
7 cycle.

1 16. The method of Claim 14, further comprising:  
2 determining a correlation output for each of the sample sequences; and  
3 determining a synchronization point for the code sequence from the correlation outputs.

1 17. The method of Claim 16, wherein determining a synchronization output comprises  
2 determining a correlation output having a highest numerical value.

1 18. The method of Claim 14, wherein a first sample value in a first sample sequence  
2 includes a first sample value in the received sample and each consecutive sample sequence  
3 includes a next contiguous sample value in the received sample as a first sample value the  
4 consecutive sample sequence.

1 19. The method of Claim 14, wherein processing comprises determining a sum of the  
2 products of the coefficients in each of the code sequence groups with each of the sample values in  
3 corresponding sample sequence groups from the first set of sample sequences.

1           20. The method of Claim 14, wherein the code sequence comprises a plurality of L  
2 contiguous values.

1           21. The method of Claim 20, wherein the code sequence is organized into a plurality of n  
2 code sequence groups.

1           22. The method of Claim 21, wherein a number, d, sample sequences are selected to  
2 process in parallel where each of the sample sequences has L contiguous sample values from the  
3 sample.

1           23. The method of Claim 22, wherein the first set of sample sequences is organized into  
2 a plurality of contiguous sample sequence groups having n values each.

1           24. The method of Claim 14, wherein the code sequence is organized into L/n groups.

1           25. The method of Claim 14, wherein the processing is completed after L/n clocks.

1           26. A method for managing a code sequence, comprising:  
2 organizing the code sequence, having L contiguous coefficients, into a number of  
3 contiguous code sequence groups having n coefficients each;  
4 selecting a number of sample sequences, d, to process in parallel where each of the  
5 sample sequences has L contiguous sample values from a received sample, where a first sample  
6 value in a first sample sequence is a first sample value in the received sample and each  
7 consecutive sample sequence includes a next contiguous sample value in the received sample as a  
8 first sample value in the consecutive sample sequence;

9 organizing sample values from each of a first set of  $d$  sample sequences into a first set of  
 10 sample sequence groups having  $n$  values each; and  
 11 processing coefficients in each of the code sequence groups in parallel with  
 12 corresponding sample values in corresponding sample sequence groups from the first set of  $d$   
 13 sample sequences, where each of the code sequence groups is processed during a different clock  
 14 cycle.

1 27. The method of Claim 26, further comprising:

2 organizing sample values from each of a second set of  $d$  sample sequences into a second  
 3 set of contiguous sample sequence groups having  $n$  values each; and processing values in each of  
 4 the code sequence groups in parallel with corresponding sample values in corresponding sample  
 5 sequence groups from the second set of  $d$  sample sequences, where each of the code sequence  
 6 groups is processed during a different clock cycle.

1 28. The method of Claim 26, further comprising:

2 determining a correlation output for each of the sample sequences; and  
 3 determining a synchronization point for the code sequence from the correlation outputs.

1 29. The method of Claim 28, wherein determining a synchronization output comprises

2 determining a correlation output having a highest numerical value.

1 30. The method of Claim 26, wherein the code sequence is organized into  $L/n$  groups.

1 31. The method of Claim 26, wherein processing comprises determining a sum of the

2 products of the coefficients in each of the code sequence groups with each of the sample values in  
 3 corresponding sample sequence groups from the first set of  $d$  sample sequences.

1 32. The method of Claim 26, wherein the processing is completed after  $L/n$  clocks.

1 33. A correlator unit, comprising:

2 a plurality of code sequence registers that store coefficients from a code sequence group,  
3 the plurality of code sequence registers storing coefficients from one code sequence group of a  
4 plurality of code sequence groups at a time;

5 a plurality of sample registers that store sample values from a plurality of sample  
6 sequences that are processed in parallel; and

7 a processing unit that processes coefficients in each of the plurality of code sequence  
8 groups in the plurality of code sequence registers in parallel with corresponding sample values in  
9 corresponding sample sequence groups from a first plurality of sample sequences in the plurality  
10 of sample registers, where each of the code sequence groups is processed during a different clock  
11 cycle.

1 34. The correlator unit of Claim 33, further comprising a plurality of accumulation sub-  
2 units each accumulation sub-unit receiving results from the processing unit for a designated  
3 sample sequence, each accumulation unit generating a correlation value for the designated sample  
4 sequence after each of the code sequence groups are processed.

1 35. The correlator unit of Claim 33, wherein the processing unit processes the  
2 coefficients in each of the plurality of the plurality of code sequence groups in the plurality of  
3 code sequence registers in parallel with corresponding sample values in corresponding sample  
4 sequence groups from a second plurality of sample sequences in the plurality of sample registers,  
5 where each of the code sequence groups is processed during a different clock cycle.

1           36. The correlator unit of Claim 34, further comprising correlation output processor  
2           that determines a synchronization point for the code sequence from the correlation outputs.

1           37. The correlator unit of Claim 36, wherein the correlation output processor determines  
2           a synchronization point from a correlation output having a highest numerical value.

1           38. The correlator unit of Claim 33, wherein the processing unit determines a sum of  
2           products of the coefficients in each of the code sequence groups with corresponding sample  
3           values in corresponding

1           39. A correlator unit, comprising:  
2           a plurality of  $n$  code sequence registers that store  $n$  coefficients from a code sequence  
3           group, the plurality of  $n$  code sequence registers storing coefficients from one code sequence  
4           group of a plurality of code sequence groups at a time;  
5           a plurality of  $n+d-1$  sample registers that store sample values from a plurality of  $d$  sample  
6           sequences that are processed in parallel; and  
7           a processing unit that processes coefficients in each of the plurality of code sequence  
8           groups in the plurality of  $n$  code sequence registers in parallel with corresponding sample values  
9           in corresponding sample sequence groups from a first plurality of  $d$  sample sequences in the  
10          plurality of  $n+d-1$  sample registers, where each of the code sequence groups is processed during a  
11          different clock cycle.

1           40. The correlator unit of Claim 39, further comprising an accumulation sub-unit,  
2           corresponding to each of the  $d$  sample sequences that are processed in parallel, that receives  
3           results from the processing unit for a designated sample sequence and that determines a



4 correlation output for the designated sample sequence after each of the code sequence groups are  
5 processed.

1 41. The correlator unit of Claim 39, wherein the processing unit processes the  
2 coefficients in each of the plurality code sequence groups in the plurality of  $n$  code sequence  
3 registers in parallel with corresponding sample values in corresponding sample sequence groups  
4 from a second plurality of  $d$  sample sequences in the plurality of  $n+d-1$  sample registers, where  
5 each of the code sequence groups is processed during a different clock cycle.

1 42. The correlator unit of Claim 40, further comprising correlation output processor  
2 that determines a synchronization point for the code sequence from the correlation outputs.

1 43. The correlator unit of Claim 42, wherein the correlation output processor determines  
2 a synchronization point from a correlation output having a highest numerical value.

1 44. The correlator unit of Claim 39, wherein the processing unit determines a sum of  
2 products of the coefficients in each of the code sequence groups with each of the sample values in  
3 corresponding sample sequence groups from the first set of  $d$  correlation sequences.

1 45. The correlator unit of Claim 39, wherein the processing is completed after  $L/n$   
2 clocks.

1 46. A correlator unit, comprising:  
2 means for storing coefficients from a code sequence group, the means for storing  
3 coefficients storing coefficients from one code sequence group of a plurality of code sequence  
4 groups at a time;

5 means for storing sample values from a plurality of sample sequences that are processed  
6 in parallel; and  
7 means for processing coefficients in each of the plurality of code sequence groups in the  
8 means for storing coefficients in parallel with corresponding sample values in corresponding  
9 sample sequence groups from a first plurality of sample sequences in the means for storing  
10 sample values, where each of the code sequence groups is processed during a different clock  
11 cycle.